



St. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
PROGRAM MBA IN ACCOUNTING & FINANCE

A THESIS ON INVENTORY MANAGEMENT AND CONTROL
OF ETHIOPIAN ELECTRIC POWER

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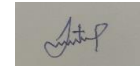
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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Simion Tareke (associate professor). All source of materials used for the thesis have been dully acknowledge. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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Certificates

This is to certify that the thesis entitles “Inventory management and Control of Ethiopian Electric Power” submitted to St. Merry University for the award of the degree of Masters in Accounting which is carried out by Anbessie Gizachew under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

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Abstract

The objectives of the study were to assess inventory management and control techniques of EEP to achieve the main objective of the study data were collected both from employee using structured questioner and interview as well as others related material. The study focused to address type the inventory controlling techniques used by the company, strategies designed by the organization to manage inventory, and how overflow of inventory monitored. Based on this the study consider 60 sample participants from different departments. The analysis was done using descriptive data analysis method. Accordingly, the finding implied that, majority of the respondents responded that they were very dissatisfied with the organization inventory management and controlling techniques such as, lack of effective inventory planning, long bureaucratic operation process, lack of inventory keeping track system, lack of continuous monitoring and evaluation system. In addition, the finding of the study proofs absence of materials and facilities required; and missing to use computer technology for inventory management functions of the company, which contributes for inventory management and controlling performances inefficient in the company. Based on the problems discussed above the study were recommend some major points such as, the enterprise should design the warehouse in a way to minimize damage and upgrade the knowledge of employees to use technology to improve service for their customers and maximize use of storage space. Furthermore, the inventory planning management of the enterprise should consider the real demand which benefit the enterprise by avoiding unnecessary inventory costs and lower inventory levels.

Key terms: -Inventory Management, Inventory Controlling Techniques

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Abbreviation/Acronyms

ABC - Always Better Control

EEP – Ethiopian Electric Power

EEU – Ethiopian Electric Utility

EEPCO - Ethiopian Electric Power Corporation

EELPA -Ethiopian Electric Light and Power Authority

OET- Order entry time

EOQ - Economic Order Quantity

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CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The current competition in Business World has led to the organization to be very keen in managing their inventories and the means associated with inventory management practices. The inventories generally comprise of finished goods, semi-finished goods and raw materials that together need effectiveness and efficiency in managing which later will guarantee the profitability in the organization (Jessop, 2014).

Inventories represent a sizeable investment and a potential source of waste that needs to be reviewed regularly and closely reviewed e.g. through perpetual stock taking, periodic reviews also as well as internal and external auditing. Thus an effective inventory control is paramount to ensuring that money is utilized appropriately. The effort of the government to expand the electric power supply to the public was hindered, through several factors, among them lack of effective inventory management and controlling system is one of the major factors (Dolber, 2007, p 12).

Lyson and Gillignham (2003) argue that inventory management involves controlling of stock or inventory levels with the physical distribution function to balance the need for minimizing stock holding and handling costs. Consistently, inventory management is aimed at ensuring that the company is supplied with the right inventories (quantities of inventory) at the right time, in the right places and ensuring optimization of the benefits of holding inventory in the organizations. Inventories are the stock of products a company holds to further its production and sales (Pandy, 2005) they appear in the form of raw materials, work in progress, finished products and supplies maintained by firms to smoothly conduct their business

Manufacturing inventory is typically classified in to a raw material, finished products, component parts, supplies, and work in process. In service inventory generally refers to the tangible goods to be sold and the supplies necessary to administer the service. Inventory management is the processes of efficient overseeing the continuous flow of units in to and out of an existing inventory. This process usually involves controlling the transferring of units in order

to prevent the inventory from becoming too high or dwindling to levels those operations the company in to jeopardy. Component inventory management also seeks to control the cost associated with inventory both from the perspective of the total value of the goods includes and the tax burden generated by the cumulative value of the inventory (Best and Kohn, 1999). The objective of inventory management is to provide uninterrupted production, sales and/or customers service level at minimum price, right time and places. Inventory is always dynamic, it requires constant and careful management and evaluation of external and internal factors and control through planning and reviews (Belay, 2005). Inventory management is a very important function that determines the health of the supply chain as well as the impacts of the financial health of the balance sheet. Good inventory management is important for the successful operation of most business and their supply, chains, operation and marketing while, poor inventory management hamper it (Donald, 2003). Therefore, with related to the above idea the main purpose of this study is, to make assessment inventory management practice of EEP.

1.2 Statement of the problem

Inventory management is the processes of efficiently overseeing the constant flow of units in to and out of an existing inventory. This process usually involves controlling the transfer of units in order to prevent the inventory from becoming too high or dwindling to levels that could put the operation of the company in to jeopardy (Alemayehu, 2010).

Inventory management is a good practice for any company. “If you are not keeping a watchful eye on your inventory or counting stock regularly, you are setting yourself up for potential inventory errors and challenging” (Dolber, 2007). Proper inventory management really can make or break your business. However, its efficiency, differ from firm to firm due to size of the firm and the nature of the inventory. In many firm there is a lack of proper inventory and controlling system. Especially, in Ethiopia the problem of inventory management system observed clearly the reason might ties with different factors such as, lack of skilled labor power, lack of motivation and incentives of labor, lack of sufficient warehouse, lack of awareness and of training.

These days there is frequent power interruption throughout the country and in Addis Ababa in particular. Moreover, our daily experience shows that there is client dissatisfaction relating to

EEU service delivery, and the problem observed in EEU directly connected with the function of EEP, as their works are supply chain. Despite all the efforts made by the government to increase power generation and supplies, frequency of power interruptions and customers' dissatisfactions that were observed from long waiting lists has remained a challenge regardless of changes in management and organizational re-structuring. Though the problem of EEP in Ethiopia remains a challenging sector however, there are no evidences as to whether these problems were attributable to inventory management and controlling practices or not.

Regarding to this the study was assesses previous studies and had put their previous gaps with the investigated study of the paper. Accordingly there were some studies obtained related to the areas such as, Sitotaw (2017) Assess inventory management practice of Ethiopian Electric Utility, in this study the researcher were more focuses to assess inventory and purchasing process of the company rather than indicating overall all techniques of inventor management system and its results. There is also another study conducted by Girma (2005), which assessed the problems of inventory management and stock recorded handling in the warehouse Ethiopian Electric corporation. There were also a gap in this study as previous one, the study were more focuses on warehouse system, in addition the study were done before, the enterprise divided in to Ethiopian Electric Utility and Ethiopian Electric Power. Therefore, this study is vital in generating and filling evidence gaps that serve as inputs for management of EEP to improve the operations there by citizens and organizations were gotten satisfactory electric power supply which helps them contribute for their nation's development.

1.3 Basic Research Question

With the above concepts in mind the following research questions posed:

1. What type of inventory controlling techniques used by the company?
2. How the enterprises design inventory management and controlling plan?
3. How the organization control and monitor over flow of Inventory?

1.4 Objective of the study

In line with the above ground of the study the following general and specific objectives are identified.

1.4.1 General Objective

The overall objective of the study is to assess inventory management and control EEP

1.4.2 Specific Objective

The specific objective of the study is:

1. To identify the inventory controlling techniques applied by the enterprise
2. To investigate the inventory management plan used by EEP.
3. To evaluate inventory monitoring system of the enterprise.

1.5 Significance of the Study

The research finding help some important executive bodies (top manager, supervisors) to look at the subject matter seriously and take corrective action on the existing problems through gives formative techniques/mechanism to identify bottlenecks, waste, problems and improvement opportunities in the inventory management of the company. This study identifies the problematic area of inventory management and controlling system. Moreover, this research provided recommendations on how to evaluate the performance of a certain inventory controlling technique's and management challenges. Based on recommendation, it helps to give training for all employees that help to develop their skill and knowledge, utilization of new and advance technologies and to provide other improvement on the performance measurement mechanism.

Furthermore, this study would serve as an input and basis for other researches, academicians, consultants and some associations who conduct further researches on related fields.

1.6 Scope of the Study

In terms of scope, the study focused on Ethiopian electric power Enterprise (EEP) as it happens to be the oldest and the largest government owned organization. The organization is vast to see all the regional logistic process and inventory management, though its scope is very wide in country level, however, this study focused on Addis Ababa main warehouse Inventory management and controlling practice of EEP. In this case, by making the initial and destination

point on the inventory or warehouse section, this research was confined to Finance, Administration, Logistic and Purchasing, Operation department, and store user of the company.

1.7 Limitation of the study

The study investigate EEP, however, it is the belief of the researcher that it would have been more comprehensive if the study were investigate both EEP and EEU as their work have a character of supply chain.. In Addition, the study was also investigating inventory control and management technique of Addis Ababa region, however, it was better if the scope were also including some regions EEP branch inventory management system. This limitation mainly emanates from the shortage of finance for research activities as the researcher is a self-sponsored one

1.8 Organization of the study

This research is organized in to five chapters. The first chapter deals with introduction of the study, background of the study, statement of the problem, objective of the study, significance of the study and delimitation of the study. The second chapter introduces review of related literature in the area. The third chapter deals with the research design and methodology. The forth chapter presents the analysis and the fifth chapter contain summary of the major findings, conclusion and recommendation of the study. Finally list of reference materials, samples of instruments for data collection and other necessary document will annexed the appendixes.

1.9. Definition of the related terms

1.9.1. Inventory control

Coordination of supply, storage, distribution, and recording of materials to maintain quantities adequate for current needs without excessive over supply or loss. A process for managing and locating objects or materials in common usage,

1.9.2. Inventory System

Inventory is a stock of any item or resources used in an organization. An inventory system is the set of policies and controls that controls levels of inventory system provides the organization

structure and the operating policies for maintaining and controlling good to be stocked (Goldber 2006).

1.9.3. Internal Control

Is a process for assuring achievement of an organization's objectives in operational effectiveness and efficiency, reliable financial reporting, and compliance with laws, regulations and policies? Abroad concept internal control involves everything that controls risks to an organization. It means by which an organizations resources are directed, monitored and measured through employee, board of the enterprise and managements of the organization (Anse, 2003).

1.9.4. External control

Any kind of organization can be affected by uncertainties happened outside the organization, such as, government policy, technology, competitiveness of other organization, political systems and so on.

1.9.5. Staff skills and qualification

Capacity, knowledge or skill is that matches or suits an occasion or makes someone eligible for a duty, office, position, privilege, or status. Qualification denotes fitness for purpose through fulfillment of necessary conditions such as, attainment of certain age, taking an oath, completion of the required schooling, or training, or acquisition of degree or diploma (Anse, 2003).

1.9.6 Inventory System

Inventory system provides the organization structure and the operating policies for marinating and controlling good to be stocked. The system is responsible for ordering and receipt of good timing the ordered placement a keeping track of what has been ordered, how much and from whom (Nicholas, 1998).

CHAPTER TWO

Review Literature

Introduction

In this part attempt had tried to indicate concepts disused related to inventory management and controlling techniques theoretically, and empirical arguments. Therefore, the literature was provided in two major parts.

2.1 Theoretical Review

Theories are analytical instruments to understand the study, to elaborate and make assumption about the subject matter. It can also help us to compare the conceptual framework are evaluate and comment on the research gap of the given study (Mwangi &Nyambura, 2015).

2.1.1 The Concept of inventory management

Inventory management is the processes of efficient overseeing the continuous flow of units in to and out of an existing inventory. This process usually involves controlling the transferring of units in order to prevent the inventory from becoming too high or dwindling to levels those operations the company in to jeopardy. Component inventory management also seeks to control the cost associated with inventory both from the perspective of the total value of the goods includes and the tax burden generated by the cumulative value of the inventory (Kenneth, 2005).

According to Sharma (2006) inventory management can be described as the protection of over investment and under investment in inventories, by improving on the main necessary operational activities. Determination of the right level of investment in inventories, consistent with production operation schedules and prompt services, is the activities of inventory management. Mohamad et al. (2016p11) Inventory management refers as the total activities in each operation stage may be in raw material, semi-finished materials or finished goods, so make sure the availability of stock and the over or under stocks always must be low. Brutus (2015, p31) explains that inventory materials represent an important asset .it is the largest single item and it has accosted in every organization. Material management is the important aspects of any

organization to function handling and acquisition of stock, assigning line management, storage, and material transport. Material management and control components role are very similar in order to make organization effective efficient.

Inventory is one of the main part of the major business's assets that is ready to use or will be ready for sale. It can be the raw materials, work in progress, good and finished goods. Inventory turnover represents one of the primary sources that enable businesses to generate revenue and continuous earnings to the company's stakeholders. Inventory is an asset and owned by a business that has an advantage of being sold to a customer. It includes items sold to end customer or retailers (Ackah & Ghansah, 2016).

According to Godana, & Ngugi (2014), inventory is essential to organization for production activities, maintenance of plant and machinery as well as other operational requirements. This results in tying up of money or capital which could have been used more productively. The management of an organization becomes very concerned in inventory stocks are high. Inventory is part of the company assets and is always reflected in the company's balance sheet.

Inventory management is required at different locations within multiple locations to protect the regular and planned course of operation against the random disturbance of running out of materials. The scope of inventory management covers replenishment lead time, carrying costs of inventory, inventory forecasting, inventory valuation, inventory visibility, future inventory pricing, physical inventory, available physical space for inventory, quality management, replenishment, and returns. Balancing these competing requirements leads to good inventory management system, which is an on-going process as the business needs shift and react to the wider environment (Ghosh and Kumar, 2003).

2.1.2 Maintainance of oprational capability Inventory management

One of the advantage of keeping inventory is to link various manufacturing stages with in the form so that down time in one storage does not affect the entire manufacturing process. it help to keep the production going on by alting abuffer between successive stage of production. Variability in time of production and transport goods can cause uncertainties that impact an oprating cost as well as customer service levels. Inventories can provide service the customer at various locations by maintaining an adequate supply to meet thier immidate and seasonal needs.

Accounting experts stated that to accepting corporate profit-and-loss, without measuring the true cost and a benefit of inventory is difficult. The following are some of the major activities of management to be efficient in managing the given organization inventory:

Capable in managing demand

Demand for inventory generates forecasts based on sales history, currently scheduled orders, scheduled marketing activities and customer information (Veinott 1966). Demand of inventory should be done collaboratively and interactively both internally across the firm's functional components and externally with supply chain partners to develop a common and consistent forecast. The forecast must also incorporate feedback from customers to integrate the influence of combined demand generation activities because unless the customers were satisfied the inventory demand forecast is meaningless. Practically, inventory demand management and forecasting were closely related, and forecasting is an extensive topic in itself (Bowersox at al., 2002).

Capable in Stock Control

Stock control is defined as the means by which materials of the correct quantity and quality were made available at the time when they were required, with due regard to economy in storage and ordering costs, purchase prices and working capitals. The modern stores management has a wide variety of functions that they have to perform as efficiently as possible. The way in which stores management carries out these tasks will be reflected in the overall efficiency of the organization because it is key supporter to the operation (Grondys & Strzelczyk, 2014). The Primary concern in the management of stock control must be to provide the right goods in the right condition at the right price in the right place at the right time. Inventory control is concerned with the acquisition, storage, handling and use of inventories so as to ensure the availability of inventory whenever needed, providing adequate provision for contingencies, deriving maximum economy and minimizing wastage and losses. Inventory control ensures that the supply of required quantity and quality of inventory at the required time and at the same time prevent unnecessary investment in inventories. Inventory control is one of the most vital phases of material management. Reducing inventories without impairing operating efficiency frees working capital that can be effectively employed (ManikandanK, 2013).

Improve customer service

An inventory system usually cannot be designed to economically respond to customer request for product or services in an instantaneous manner. Inventories provide level of product or service availability which when located in the proximity of the customer can meet a higher customer service level. The presence of these inventories may not only maintain sales but actually increase it to ascertain extent (Bowersox, 2002)

Cost Effective Inventory Management

According to Douglas and Lambert (2006) there were four major components of inventory carrying cost:

Capital cost, storage space cost, inventory service cost, and inventory risk cost.

- 1. Capital Cost.** Also sometimes called the interest or opportunity cost which type focuses upon what having capital tied up in inventory. The capital cost is frequently the largest component of inventory carrying cost. A company usually expresses it as a percentage of the value of the inventory the company holds. All companies seek to reduce inventory because management recognizes that holding excessive inventory provides no value added to the firm's operations.
- 2. Storage Space Cost.** This cost category incorporates handling costs associated with moving Products into and out of inventory, and storage costs such as rent, heating, and lighting. Such Costs may vary considerably from one circumstance to the next.
- 3. Inventory Service Cost.** This carrying cost component includes insurance and taxes. Depending Upon the product value and type, the risk of loss or damage may require high insurance premiums. In most cases, there will be few, if any; significant changes from year to year in the tax and insurance components of the inventory carrying cost such as marine or inland insurance.
- 4. Inventory Risk Cost.** This major component of inventory carrying cost reflects the very real Possibility that inventory value may decline for reasons largely beyond corporate control. The Inventory risk costs most of the time were due to management problem and includes the costs associated with obsolescence, pilferage, damage, theft, and other risks to inventoried product.

Capable in managing Quantity discount inventory

Inventories of item carried to take advantage of price quantity discount because many supplier offer discount for large orders. However such an advantage must keep a balance between storage cost and higher cost due to spoilage, damage stock, theft, insurance etc. Furthermore, investment in high inventory due to bulk purchase will also reduce cash to be used for other purpose.

Avoiding stock outs

Labor strikes, natural disaster, variations in demand and delay in suppliers are the type of contingencies against which inventories can afford some protection, as well as to avoid the reputations for constantly being out of stock. Cost of good can be expensive price to pay for not having the right item and therefore, inventories help in avoiding shortage at a minimum cost (j,k SHARMA page 556-557)

Planning Inventory Order

“Key parameters and procedures, namely, when to order, how much to order, and inventory control, guide inventory planning. When to order is determined by the demand and performance average and variation. The how much to order is determined by the order quantity. Inventory control determines the process for monitoring inventory status.” (Bowersox, 2002).

Inventory records management

Inventory control record is important to make decision to buy and sell. Some company control their stock by taking physical inventories at regular intervals, monthly or quarterly. Others use a dollar inventory record that what the inventory gives a rough idea of what the inventory may be from day to day in terms of dollars. If the stock is made up of thousands of items, as it is for a convenience type store, dollar control may be more practical than physical control (Arnold, 1998).

Inventory accuracy defines how well the inventory records, specifically the quantities on hand, match the actual quantities in the storeroom. Accurate records are a prerequisite to effective inventory management. Susan & Michael (2000) accuracy of inventory records is necessary to

provide satisfactory customer service, determine replenishment of individual items; ensure that material availability meets repair or project demand, analyze inventory levels and dispose of excess inventory.

Stock Verification and Accounting

To reconcile the stock records and documents for their accuracy and usefulness, to identify areas which require more disciplined documents control, and to back up the balance sheet stock figures, a provision for independent central stock verification team instead of departmental committees be made to verify the stocks annually. A policy of centralized stock verification is likely to result in better reconciliation of the assets as per the balance sheet and the actual assets in the stock (Sharif, 2015).

Design of Material handling system

Inventory material handling system designed is taking into consideration of cost minimization. Material handling approach is most important activities in many conditions since, while material handling can add a value to an organization, it is typically difficult to measure and enumerate the benefits included with material handling. But the material handling cost is much easier to measure the cost (Heragu,2009)

Reduce cost of materials

Holding inventory has a cost associated with it, however, it can indirectly reduce operating cost in other activities and may more than of the set the carrying cost. Holding inventory may also encourage economies of production runs. Production output can be decomposed from the variation in demand pattern when inventories exist to act as buffers between the two (Canel, 2000).

Provide inventory Involvement system

The effects of inventory control systems on organizational performance and effects of lead time on organizational performance. Inventory control systems are the most important function of materials management and it forms the nerve center in any organization (Ramakrishna, 2005, p31). An inventory control system is a system that encompasses all aspects of managing a

company's inventories; purchasing, shipping, receiving, tracking, warehousing and storage, turnover, and reordering. Using that definition, the respondents were required to respond to the statements as it implied to the organization (Keitany, Wanyoike & Richu, 2014).

2.1.3 The concept of Inventory Control

Eni (2001) defines inventory control as the problems of verifying the quantity, the value and the balance of the entire range of materials held in stock, so that it would be easy and possible to give the exact quantities of materials in the store at any given time. It helps the store-keeper (or the inventory controller, as the case may be) to tell how much was ordered (requested for), how many have been used, what is remaining and when to place the next order so that the enterprises would not lack materials to work with at any point in time. Similarly, Sharma (2004), views inventory control as the means by which materials of the correct quantity and quality is made available as at when required with due regard to economy in terms of storage and costs (both ordering and working capital). He also opines that inventory control is the systematic ways of locating; storing and recording of goods in such a way that desired degree of service can be made to the operation shops at minimum ultimate cost.

Inventory control is the management activities that attempt to maintain the uphold stocks at their estimated levels. It is practiced by planning necessary stock sizes at usual intervals, by taking two stocks then counting and valuing it at the same interval comparing the two sets of feedback margining of variances (Sharma, 2006). Inventory is a major asset that should be the sources of returns on capital investment. The marginal profit on sales got from return on inventory investment accordingly, this would not occur without inventory. Accounting experts stated that to accepting corporate profit-and-loss, without measuring the true cost and a benefit of inventory is difficult. Because lack of measurement clarity it makes complex to evaluate the trade-offs between service levels, operational activeness, and inventory maximum or minimum level, while the cumulative of inventory levels have decreased, the inventory carry of much enterprise still it is greater than their basic requirement (Bowersox, 2002).

2.1.4 Purpose of inventory

Inventory Management plays a decisive role in the enhancement of efficiency and competitiveness of business enterprises. There is increased need for organizations to in place

effective inventory management practices as a strategy to improve their quality of business operation. (Rajeev, 2008 p12). Effective inventory management system means holding an appropriate quantity of inventory with better quality. Too much inventory consumes unnecessarily our limited space, creates a financial burden, and increases the possibility of materials to be obsolete. Too little quantity of inventory often disrupts business operations, and increases the likelihood of poor customer service (Dimitrios, 2008).

Wise inventory management requires the analysis of the costs of maintaining certain levels of inventory as there were costs involved in holding too much stock. There were also costs involved in holding too little hence the need to put in place an effective stock management system to ensure reliable business operation (Atrill, 2006,). The Economic Order Quantity (EOQ) model is very important for determining the optimal inventory level that takes into account the inventory carrying costs, stock-out costs and total costs which were helpful in the determination of the appropriate inventory levels to hold. (Ross et al. 2008, p64). Large organization rely on quantitative and computer program to get more information on their inventory management but small firms make use of management judgment without quantitative or computerized systems for decision making on inventory.

Just-in-time inventory management techniques were increasing in popularity, as were automated time-phased inventory re-order system. Some inventory management practices such as assessing inventory levels and balancing stock-out costs against expenses related to higher inventory levels were seldom used in practice (Romano, 2011). Maintaining optimal inventory levels reduces the cost of possible interruptions or of loss of business because of scarcity of inventory, reduces supply costs, and protects from customer dissatisfaction. The inventory conversion period has a negative effect on a business's performance. Shortening the inventory conversion period could increase stock out costs of inventory which results in losing sales opportunities and leads to poor performance (Deloof, 2003). The importance of firms keeping their inventory at an optimum level by analyzing the relationship between working capital management and corporate profitability will lead to excessive tying up of capital at the expense of profitable operations.

Inventory management has impact on demand and supply of products, buffer stock to cover for supply uncertainty and lead time. The quantity of inventory ordered at particular intervals does

affect the replenishment intervals. (Sander et al. 2010) Gruen & Corsten (2007) indicated that, stock-outs have serious implications for businesses and they affect consumers, retailers, and manufacturers. Consumer purchase behaviors, such as, product replacement, delayed purchase, or not making a purchase sometimes result from such events. Zinn & Liu (2008) suggest that when organizations faced with a stock-out, a consumer search for a substitute product if they have alternatives. Once customer lost, the consumer may be lost forever, resulting in a negative impact on the long-term built good will of the organization. Even a loyal consumer may visit another firm to find the desired product, a situation that may result into loyalty switching. Repeated stock outs negatively affect not only manufacturers but retailers through the loss of customers and employee time. Scholars like (Basuroy, S., Mantrala, M., and Walters, G. (2001). Suggest that to reduce stock outs and improve performance, businesses should employ effective inventory management practices and automatic replenishment programs. On effective inventory management on the performance of businesses, Sushma & Phubesh (2007) in their study established that businesses' inventory management policies had a role to play in their profitability performance. Mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations and suggested that managers can create value for their firms by keeping inventory to an optimum level.

Effective inventory management processes helps increase operational efficiency of firms; improves customer service; reduces inventory and distribution costs; and enables businesses track items and their expiration dates consequently balance between availability and demand (Pandey, 2004).

According to Dolber systems of inventory (2007) argue that all firms keep supply of inventory for the following reasons:-

- 1. To maintain independence of operations.** A supply of materials at a lost work center allows that flexibility in operation inventory allows management to reduce the number of setups. The time that it takes to do identical operations will naturally vary from work unit to work unit. The sum total performance of an organization is the collective performance of workstation located at different localities or units. Therefore, to meet business goal, effective and efficient inventory management at all work station is crucial.

2. **To meet variation in product demand.** If the demand for the product or service is known precisely, it may be possible to provide services exactly to meet the demand. But demand is not completely known because we can't have full information about customers, and a safety or buffer stock must be maintained to absorb variation.
3. **To allow flexibility in service provision scheduling.** A stock of inventory relieves the pressure on the service provision to get the goods out. This leads to longer lead times, which permit service planning for smoother flow and lower cost operation through larger lot size production.
4. **To provide a safeguard for variation in inventory delivery time.** When material is ordered from a vendor, delays can occur for a variety of reasons: a normal variation in shipping time, a shortage of material at the vendor's plant causing backlogs, an unexpected strike at the vendor's plant or at one of the shipping companies, a lost order, or a shipment of incorrect or defective material.
5. **To take advantage of economic purchase order size.** There were costs to purchase materials. The larger each order is the lower ordering cost of the materials because of the bulk purchase. Organization has to decide the quantity and time to procure materials economically. Materials.

2.1.5 Functional inventory controlling system

The function of inventory control is to balance set up costs of procurement with inventory carrying cost in order to see that total cost is kept to minimum, which at some time holding of optimum inventory is possible (Gould, 2002, p83). According to David and Wallace (2003, p14) the technique for ensuring availability of material while at the same time, holding. In check, generally, through a system tendency to hold large amount of stock than is necessary. All inventory control system a set of hard ware and software base tool that automate the process of tracking inventory. The kind of inventory tracked with an inventory control system can include almost all the types of Quantifiable good, including food, clothing, Books, equipment and any other item that consumers, retailers or whole sellers may purchase, modern inventory control system are almost exclusively based on barcode technology. Through barcode we were initially developed to automate the problem of grocery store check out, their ability to encode a wide variety of alphabetic and numeric symbol makes them ideal for encoding merchandise system

work in a real time using wireless technology to transmit information to a central computer system as a transaction occur (Hines, 2004).

2.1.6 Responsibility for inventory control

There should be a little doubt at this point that basic responsibility for inventory control lies with top management. The effect of poor inventory management, unfortunately are not directly visible on the operation statement as a composite cost of inventory management nevertheless, in most companies this directly cost, dispersed and hidden throughout the operating statement can have a significant influence on profit. The inventory function historically has been assigned to either purchasing or production control with slightly more firms placing it under the jurisdiction of purchasing a production inventory is the reservoir which operationally connects these two departments (Donald W, 1997).

2.1.7 Models of Inventory Controlling Techniques

According to David (2003) there are a number of techniques which play an important role in the inventory control program these techniques are very helpful in rationalization of inventory control approach and assist in formulation of inventory control policies. Some of these techniques forming part of the inventory control program are

Economic order Quantity Model

Inventory models deal with idle resources like men, machines, money and materials. These models are concerned with two decisions: how much to order (purchase or produce) and when to order so as to minimize the total cost. For the first decision—how much to order, there are two basic costs are considered namely, Inventory carrying costs and the ordering or acquisition costs. As the quantity ordered is increased, the inventory carrying cost increases while the ordering cost decreases. The ‘order quantity’ means the quantity produced or procured during one production cycle. Economic order quantity is calculated by balancing the two costs. Economic Order Quantity (EOQ) is that size of order which minimizes total costs of carrying and cost of ordering. i.e., Minimum Total Cost occurs when Inventory Carrying Cost = Ordering Cost. S. Anil Kumar N. Suresh (2009).

The economic order quantity, which is also recognized as the Wilson EOQ model, is an inventory management technique that identified the most favorable quantity to order, which is in line with minimizing the total variable expenses that are needed to order as well as to hold inventories (Lee, 2002, p65). Economic Order Quantity denotes the optimal ordering level of an inventory which helps in the minimization of expenses. This inventory management approach (EOQ) makes the assumption that the demand for an item is well known, the lead time is well-known and constant, that the receipt of an order happens immediately, the discounts of quantity are not computed as part of the model and that inventory's shortages do not happen. The EOQ graphs demonstrate the association between the costs of ordering, the expense of holding inventories and the economic order quantity (Nair, 1995).

ABC analysis Model

Inventory optimization in supply chain, ABC analysis is an inventory categorization method which consists in dividing items into three categories, A, B and C: A being the most valuable items, C being the least valuable ones. This method aims to draw managers' attention on the critical few (A-items) and not on the trivial many (C-items). Joffrey Collignon, Joannes Vermorel, (2012) ABC analysis is sound recognized categorization technique as far as the pareto principle is concerned, whose main purpose is for establishing the items that should be prioritized in the management of an inventory (Ramanathan 2006). Flores and Why back (2007) is of the view that ABC analysis is a method for prioritizing inventories. Inventories are classified into 3 sub-classes, including A, B and C. A large portion of the efforts of management are utilized on administering An Items A, B in-between and C items get the least attention. Brown (Bloomberg, Lemay and Hanna 2002) notes that the ABC analysis categorizes products based on importance. Importance may come from cash flows, lead time, stock outs, sales volume, or profitability. Once the ranking factors is chosen, break points are chosen for classes A, B, C and soon. The 80-20 concept is particularly useful in distribution planning when the products are grouped or classified by their sales activity.

The top 20 percent might be called A times, the next 30 percent B items, and the remainder C items. Each category of items could be distributed differently. For example, A items might receive wide geographic distribution through many warehouses with high levels of stock availability, whereas C items might be distributed from a single, central stocking point (e.g., a

plant) with lower total stocking level than for the A items. B items would have an intermediate distribution strategy where few regional warehouses are used (Ballou 2004).

Vendor Managed Inventory (VMI) Model

The American Production and Inventory Control Society defines Vendor Managed Inventory (VMI) as a means of optimizing supply chain performance in which the supplier has access to the customer's inventory data and is responsible for maintaining the inventory level required by the customer. It is accomplished by a process in which re-supply is done by the vendor through regularly scheduled reviews of on-site inventory VMI, referred to as a program of supplier-managed inventory or direct replenishment, emerged in the late 1980's as a partnership to coordinate replenishment decisions in a supply chain while maintaining the independence of chain members. In this relationship between a vendor and customer, it is the *vendor* that decides when and in what quantity the customer's stock is replenished.

Just in Time (JIT) model

Beginning in the early 1980s, a number of US firms followed the pioneering efforts of Shigeo Shingo and Taiichi Ohno and adopted just-in-time (JIT) manufacturing in an attempt to reshape their manufacturing environments (Bragg et al., 2005) and to become more agile (Helo, 2004). JIT requires that a company have a few reliable suppliers and is believed to enhance productivity and build a leaner manufacturing system which minimizes inventories (Helo, 2004) which, in turn, reduces risk and helps minimize the cost of manufacturing (Curry and Kenney, 1999; Rahman, 2004).

The Just in Time is an inventory management practices with the objective of maintaining just sufficient material at the right place and at the right time in order to make first the right quantities of inventories (Carlson, 2002). Just in time inventory management system helps in reducing inventory costs by avoiding carriage of excess inventories and mishandling of raw materials. According to Kortz (2003), Just in time purchasing recognizes high costs associated with holding high inventory level and as such it has become important in most organizations to order inventory just in time of production so as to cut costs of holding inventory like storage lighting, heating, security, insurance and staffing (Dimitrios, 2008).

Barcode Model

A barcode is an optical machine-readable representation of data about the object to which it attaches. Barcodes are used for identification, handling, retrieval and storage of goods in warehouses and stores. It is the most popular technology in many applications. Individual inventory items, cartons or unitized packages are affixed with a barcode that can be read by a barcode scanner attached to an online computer system. Barcode is assigned to a particular inventory item to show its identity during storage, retrieval and dispatch. Barcodes are further used for communication of dispatched items for the preparation of bills by accounts departments and making periodic reports on inventory status and sales. The barcodes facilitate the tracking of specific items in the warehouse during inventory audit or material pick up. They also help in tracking consignment during transportation/ inspection at the customer end. The information that may be required generally relates to the country code, manufacturer's name, product details, date of manufacture, material content, and so on. The details are required at the users end for inventory management and are in machine-readable codes in the form of bars and spaces (Sople, 2010).

Simulation inventory control Model

Maria (1997p21) describes the simulation of a system as the operation of a model of the system that can be reconfigured and experimented with. The main reason to use simulation modeling is to reduce the cost associated with impractical implementation in the real system. In simulation, the system can be studied and properties of the actual system can be inferred. The use of simulation is to alter a system or test a new system and reduce the chance of failure before the system is implemented. Simulations are very useful to determine where the problem lies in an actual system or to determine the best design of a proposed system.

Lean inventory Model

Lean inventory management is all about cutting the fat out of your business and finding just the right balance between too much and too little inventory on hand. That means no more hoarding products just because you can get them cheaper by buying them in bulk, and no more guessing how many products to keep in stock Robert Lockard (2012) A Lean inventory management system allows a distributor to meet or exceed customers' expectations of product availability

with the amount of each item that will maximize the distributor's net profits. In a Lean system, inventory is regarded as a sign of a sick factory that is in desperate need of some type of treatment. The ideal goal for a company should be to have an inventory as close to zero as possible. Effective inventory management allows a distributor to meet or beat their customers' expectations of product availability while maximizing their profits (Steve Krar 2008).

Best Ordering Quantity

Quality and Quantity of an item are the two most important aspects in its procurement, once the quality is established, the question remains as to, how much to procure, A decision on the best quality to purchase is quite a complicated one, if all the pertinent factor are considered and number of items for procurement its very large (Li, 2002).

Inventory Counting

The span of material management activities purchasing through production, planning and scheduling to the final ware house relies heavily on accurate record of an hand materials the record are inaccurate, Excessive inventions or shortage may result . This could mean stoking obsolete item or explaining un met schedules or late deliveries to irate customer (Bowerso, 2007).

Periodic Physical counting

Perhaps you can recall having tried to enter a retail store only to find that it is closed for inventory company that use the periodic physical counting method typically close their door or at least stop all flow in to an put of inventory from one day a year to account their physical inventory who is available, often on an overtime pay basic, un information these onec a year inventory taker is usually unskilled at inventory taker may well generates as many errors as they find. There are firm, such washing ton inventory service, wide, but gain, this involve cost (Cox, 2003).

Perpetual (Cycle) Counting

Is continuous physical counting of inventory so that all items are counted at a specified frequency and inventory recording are counter periodically reconciled with actual account data

the objective of cycle counting is to maintain a high level of inventory record accuracy so that the level of inventory record accuracy so that company asset can be reported correctly and dependent production and marketing activities can be supported. This requires that errors can be quickly identified, causes of error determined and conditions connected so that the same errors are knowledgeable individual. Cycle full time by counting inventories as professionals they develop skills for using hand counters and scales, for forms moving toward computerized inventory system, inventory record in accuracy is one of the first hurdles to overcome. Record accuracy is measured by first establishing an allowable tolerance regarding the difference between the actual count and the record, the quantity on the record will be considered accurate if it is within this tolerance. The procedure for determining the number of items to count per day (On average) is relatively simple. A cycle is the time required to count all items in inventory at least once. This is often a year the account frequency is the number of items counted in each cycle (Dolbere, 2007).

Valuation of inventory

Inventory is a very important in any organization It is controlled so that it does not exceed the requirements and at the same time there are no stock outs. Excess inventory is a source of worry money various items of inventory are procured at different times items of inventory are procured at different times and at different prices. Price fluctuation is a regular phenomenon and can be small or even large. This fluctuation in price does have a direct impact on the cost of material issued as well as on the cost of inventory (ManikandanK,2013). According to Manikanda (2013) various methods can be used for valuation of materials issues which are

First in first out

In this method of material issue is worked out on the basis of cost material received earliest in the warehouse. This method ensures that the materials are issued to the actual cost and there by no profit or loss is incurred in the evaluation. If the cost of material purchased is low, the value of issues worked out easy to work with provided the price fluctuation are reasonable during a specific period Under inflationary condition , the profits are inflated there by advancing the payment of taxes this method is therefore not preferred by the finance manager (Nicolas Lewis,1998).

A. Last in first out

The value of material issued under this method is based on the price of last purchase this method insures that materials are issued at actual cost, but it is option of FIFO method under this method, the profit are not showmen immediately and consequently, text liability is differed the main advantaged to this method Of valuation is that the cost of material charged to production is closely related to the current price level, provide that the material in purchased recently this method is preferred in case of material whose price reduce over period (Dolbere, 2007).

B. Weighted Average Method

The weighted average method of inventory valuation is based on the assumption the good commingled and what no particular both of goods is retained in the inventories when the perpetual Inventory system is used, the weighted average method given the result of a mount weighted average, under the perpetual inventories system, a new weighted average is computed after each purchase and for this reason is known as moving we inventory valuation and inventory income measure under FIFO and those achieved under LIFO. below replacement cost and during a period of below replacement cost and during a period of felling price if tend to the above replacement cost. The method of evaluation has considerable effect on the profit and loss of accompany (Davide, 2003).

Maximum level

Maximum level is a control point to avoid any extra stock. An attempt is made to avoid excessive purchasing that may result in crossing the maximum level and to ensure that the money is not blocked unnecessarily. How ever , in practice there are situations when maximum

level is crossed internationally to avoid other benifits such as alterative discounts, saving on transportation freight charge or strategic buying decision. Fail to control the maximum level may result in a non moving item and obssolescence . Inventory turn over would be adversely affected if maximum level is not controlled.

Minimum level

The minimum level is the level become which inventory level is not allowed to fall. Incase for any reason, the stock goes below the minimum level, the matter is reported immidiately and action

is taken to ensure that the material is received at the earliest with extra effort, for example, the item could be purchased from any other source even at a higher cost, or the item is received by a faster mode of transport such as by air or courier service. In fact, reaching minimum level is an indication of the danger of a likely stock-out situation. It is essential to keep an eye on all items, which have reached the minimum level (Shield and Rangarajan, (2013).

Safety stock

Safety stock is a level, decided by keeping in view the degree of safety planned against being out of stock. A very high degree of safety would need a high level of inventory, whereas a low degree of safety would require low inventory stock. If the risk of being out of stock is acceptable, then there is no need of having safety stock. Inventory level follows the path of “s” curve for the safety stock. For a very safety, the stock level is also very low. As the extent of safety plan increases, a high level of inventory is to be maintained for high level of safety stock. A very large quantity is to be stocked, which is not desirable. A balanced approach is to be followed, where in depending on the criticality of the stoppage of plant, the safety level is decided according to the desired safety level, which is termed as “safety stock” can be decided (ManikandanK, 2013).

Lead time

The time from the point of requisition of material is raised by the user or the inventory control section has raised a purchase requisition after review of stock level and future requirements to the point when material is received, inspected and is ready for use is known as the lead time. Lead time is dependent on various factors both internal and external. Internal factors are mostly under the control of the organization, but the external factors are not under its control. Correct planning, assessment and monitoring of various elements of lead time are necessary to get the item at the required time.

Reorder level

Reorder point is another important tool for controlling inventory mainly from the point of view that there should not be stock out, reorder point is dependent on lead time. It is set in such a manner that if the order is placed at the reorder point, the material for replenishment of the

inventory item should be received by the time the inventory level reaches a minimum level. The reorder point shifts with the rate of consumption and is set based on average yearly consumption. If the lead time is fixed in practice, the lead time is established quite correctly based on the past

2.1.8 Benefit of Holding Inventory

The second element in the optimum inventory decision deals with the benefit associated with holding inventory. The major benefits of holding inventories are the basic function of inventory. In other words, inventories perform certain basic functions which are of crucial importance in the firm's production and marketing strategies (Donald, 1997).

This has a beneficial effect on the firm's operation. In other words, three types of inventory—raw materials, work in process, and finished goods—perform certain useful functions. Alternatively, rigid (coupling) of purchase and production to the basic function of inventory is to act as a buffer to decouple or uncouple the various activities of a firm so that all do not have to be pursued at exactly the same rate. Thus, key activities are (1) purchasing, (2) production, and (3) selling (Shield and Rangarajan, 2013). The term uncoupling means that interrelated activities of a firm can be carried on independently. Without inventories, purchasing and production would be completely controlled by the sales schedule. If the sales of a firm increase, these two words also increase and vice versa. In other words, purchase and production functions would depend on the level of sales. It is of course true that in the long run, the purchasing and production functions would depend on the level of sales. It is of course true that in the long run, the purchasing and production activities should be tied to the sales activities of a firm. But, in the short term, they are rigidly related. The three key activities cannot be carried out efficiently. Inventories permit short-term relaxation so that each activity may be pursued efficiently. Stated differently, inventories enable a firm in the short run to produce at a rate greater than purchase of raw materials and vice versa, or to sell at a rate greater than production and vice versa (Manikandan, 2013).

Inventory enables uncoupling of the key activities of a firm; each of them can be operated at the most sale schedule is undesirable in the short run as it will deprive the firm of certain benefits. The effects of uncoupling (maintaining inventory) are as follows.

Benefits in productions

Finished goods inventory serve as uncouple production or sale. This enables production at a rate different from that of sale. That is, production can be carried on demand at a rate higher or lower than the sales rate. This would be of special advantage to a firm with seasonal sales pattern. In their case, the sales rate will be higher than the production rate during a part of the year and lower during the off season. The choice before the firm is either to produce a level to meet the actual s production during off season, or, produce continuously throughout the year and build up inventory which will be sold during the period of seasonal (Alemayehu, 2010).

Benefits in work in process

The larger the step involved in the production process, the larger work in process and vice versa. By shortening the production time, efficiency of the production can be improved and the size of this type of inventory reduced. In a multi stage production process, the work in process inventory serves a second purpose also. It uncouples the various stage of production so that all of them do not have to be performed at the same rate. The stages involving higher set up costs may be most efficiently performed in batches with a work in process. It is accumulated during a production run (Donald, 1997).

Benefits in sales

The maintenance of inventory also helps affirm to Enhance its sales effort on things, if there are no inventories of finished goods, the level of sales will depend up on level of current production. Affirm will not be able to meet demand instantaneously there will be a large depending up on the production process. If the firm has inventory, actual sales will not have to depend on lengthy manufacturing process thus, inventory serve as a competitive marketing tool to meet consumer demand a basic requirement a firm competitive to supply good rapidly. If it not able to do so, the customers are likely to switch to supplier who can supply goods at short notice (Dolbere, 2007).

Inventory thus, Ensures continued patronage of customers. Moreover, in the case of firm having a seasonal pattern of sales, there should be a substantial finished goods inventory prior to the sales sea son failure to do so may mean loss of sale during the peak season. To summarize the preceding discussion relating to the objective of inventory management, the two main aspects

pertain to the minimization of Investment in inventory, on the other hand and the need to ensure that production and sales operation are smooth they are often in conflicting with each other (ManikandanK, 2013).

2.2 Empirical Literatures

Different authors have been doing various endeavors to clarify the relationship between inventory management practices and the efficiency of a firm. Rajeev (2010) contends that stock administration practices are a method for procuring intensity. Factors of his study were Inventory Management rehearses as an independent variable, and cost diminishment as a reliant variable. The discoveries of the survey showed a positive relationship between the factors. Koumanakos (2008) contemplated the impact of Inventory Management on the solid execution of assembling firms working in Greece. The theory that is inclined to the stock management stimulates variations in the business's budgetary implementation. The discoveries recommend that the higher the level of inventories protected by a firm, the lower the rate of return. Eckert (2007) analyzed Inventory Management and the part it plays in enhancing client benefit levels. He found a positive relationship between stock administration practices and consumer loyalty because of decreased number of stock-outs

Ackah & Ghansha (2016) by their study, on the title of Assessment of Inventory Management, the researchers assessed the Performance of the Production Sector to find out how the management of inventory within work would be effective and bring a lot of cost savings for the organization to increase organizational profitability. In order to reduce the cost of holding to ensure the continuity of supply at the same time shows, how the management of inventory within operational works would be effective and bring a lot of cost savings to the organization. Therefore increasing organizational profitability since inventory represents the asset account. Despite the growing concern for non-stock procurement policies, inventory continues to play a vital role within organization supply chain (Ackah & Ghansha 2016).

Akelo (2011) focused on establishing the impact of inventory management practices on performance of Non- Governmental Organizations. By targeting ten Non-Governmental Organizations situated in Nairobi County, the research study focused on a total sample of seventy respondents. According to the analysis of the data via descriptive statistics, the study

recognized that a unit in ABC Analysis would lead to an increase in operational performance of Non-Governmental Organizations by a factor of 0.683 whilst a unit increase in Economic Order Quantity leads to an increase in operational performance of Non-Governmental Organizations by a factor of 0.702. On the other hand, a unit increase in Demand focus inventory leads to an increase in operational performance of Non-Governmental Organizations by a factor of 0.699.

Demisse (2015), Nganga (2013) and Nzuza (2015) on their studies, assessed factors affecting the effectiveness of inventory control, on problem area of long purchasing processes system and factors affecting inventory control problem on lack of knowledge and training of employees and also the practices of inventory audit is negatively affected inventory. Ogbo and Ukpere (2014) studies on the effective inventory control management, according to their finding an effective inventory control system drives high inventory cost and storage cost that decreases the organization profitability. Improving inventory control system has a benefit of cost reduction improving sales effectiveness, reduction of waste, transparency and accountability, easy storage and high inventory utilization. In order to achieve all these, organization have to maintain flexible inventory services.

Sitotaw (2017) Assess inventory management practice of Ethiopian Electric Utility, in this study the researcher were more focuses to assess inventory and purchasing process of the company rather than indicating overall all techniques of inventory management system and its results.

According Girma (2005), studies on title of the assessed the problems of inventory management and stock recorded handling in the warehouse. He stated his finding that the major problems of inventory management are- Lack of attention of store management, lack of assigned qualified employees to the right position on the right time, no planning mechanism to solve problems to improve inventory management and controlling system and lack of work performance evaluation of employees of the warehouse. The warehouse management and employees are working on inventory management and controlling function facing with lack of knowledge or skill to meet the expected performance. The company inventory items kept unsafely, misused of some materials and improper guide lines work manual. The researcher also gave his comment on the company concerning the periodic and perpetual inventory system, company should attention to

inventory management, plan and evaluate warehouse employees performance, approve employees who are assigned in warehouse and prepare work related policies and procedures

2.3 Summary and Literature gaps

Though the problem of EEP in Ethiopia remains a challenging sector however, there are no evidences as to whether these problems were attributable to inventory management and controlling practices or not. Regarding to this the study were assess previous studies and had put their previous gaps with the investigated study of the paper. Accordingly there were some studies obtained related to the areas such as, Sitotaw (2017) Assess inventory management practice of Ethiopian Electric Utility, in this study the researcher were more focuses to assess inventory and purchasing process of the company rather than indicating overall all techniques of inventor management system and its results. There is also another study conducted by according Girma (2005), which assessed the problems of inventory management and stock recorded handling in the warehouse Ethiopian Electric Corporation. There were also a gap in this study as previous one, the study were more focuses on Whereas inventory control and management practice, in addition the study were done before, the enterprise divided in to Ethiopian Electric Utility and Ethiopian Electric Power. Therefore, this study is vital in generating and filling evidence gaps that serve as inputs for management of EEP to improve the operations there by citizens and organizations were gotten satisfactory electric power supply which helps them contribute for their nation's development.

CHAPTER THREE

3. METHODOLOGY OF THE STUDY

3.1 Research Design

Descriptive survey method was employed for it is efficient to evaluate and determine the adequacy of a program under existing condition against the established standards (Best and Kohn, 1999p17). The descriptive method is special importance for this particular study to portray how several factors affect inventory management and controlling system of the industry. In general the method is believed to generate adequate and relevant data breadth pertaining to the issue under investigation if backed by appropriate research procedure.

3.2 Research Approach

The three methods that are commonly implemented in a research are quantitative, qualitative and mixed, where one of them is not better than the others, all of this depends on how the researcher want to do a research of study(Creswell, 2005). This study used the mixed approach because for variable that cannot assume numeric values we used qualitative variable and for variable that can assume numeric value we used Quantitative variables.

3.3 Data sources and type of data

In order to carry out any research activity information should be gathered from proper sources. Therefore, the achievement of the objective this study used both primary and secondary sources of data. The primary sources of the data serves as main sources of the study, they were collected from, employee in the organization such as, store employee, purchasers, accountant, and managements. Attempts were made to make use of secondary sources of data as well. In this study one of the purposes is to develop theoretical framework of the study for which national and international literature related to the study under consideration reviewed this include, documents, related researches, financial report and internet.

3.4 Data collection methods

The major data collection instruments used questionnaires, and interview guides. Questionnaires were used where a respondent could easily read and understand without assistance, the questionnaire were prepared based on the research objective. whiles interviews were conducted for respondents whose response required follow-ups and did not have the time to go through the questionnaires and provide the needed responses and to get in depth understanding of the issue from these concerned managers supervisors who have direct relationship with the activity and have the knowledge and expertise in their area of field who were expected to answer the interview questions briefly. In addition the study also considers some information from the organization documents specifically, to retrieve information on the techniques used by the organization to control innovatory. In general questionnaire were distributed for finance department, store employee, and procurement, while interview in depth were done with management of each departments.

3.5 Target Population and Sampling Techniques

3.5.1 Target Population of the study

The target population was all employees and management members of the research sites¹⁵ (service centers of EEP in Addis Ababa). It was to mean that the target population of the study was the 150 permanent management and non-management staffs who were working in the Addis Ababa regions of Ethiopian Electric Power.

3.5.2 Sample frame of the study

It would be impractical and unmanageable to include all population in the study, but it shall be advisable to come up with representative samples and generate the findings of the study. Accordingly, purposive sampling technique was used. This is because the researcher wants to find adequate information from the selected employees who have relatively better knowledge the specific study area, such as, finance department, store employee, procurement, and management bodies, . Besides, the results of purposeful samplings are usually expected to be more accurate than those achieved alternate form of sampling.

3.5.3 Sample size of the study

The study focused on employee specifically worked with related to inventory management practice of the organization accordingly, the study consider 150 employee worked at the head office in Finance, Administration, Logistic and Purchasing, Operation department, and store user of the company. Accordingly, size of the sample determined based on the rule of Thumbs. The rule state that, "A sample account 30 % to 40 % for a number of total population less than 400 is found to be appropriate" (Croswell, 2010). With regards to this, total numbers of target population of the study were 150. According to the rule 40 % (60) sample respondents participated as a sample of the study.

3.6. Method of data analysis

The data collected from different sources, both quantitative and qualitative, were process and analyzed. Mixed approach was used so it can be helpful to come up with well validated and substantiated findings. Accordingly, data obtained through closed ended questionnaire first edited for their completeness, categorized, registered and interpreted using descriptive statistical method. The data were analyzed, summarized and presented using tables, pitchers, graph and percentages. Data also collected from interview and analyzed qualitatively through narration and by the direct quotation when necessary.

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRETATION

This core chapter deals the collected data through questionnaire, documents of the organization as well as interview. Each of the collected data was discussed briefly, accordingly, the study analyzed in to two major parts; in the first part data obtained through questionnaire were analyzed, followed by discussion of interview.

4.1 Background of respondents

Analyzing respondents background is important, to associate, employee level of education, work experience, age condition and its effect on organizational inventory management and control.

The researcher made every effort to reach related departments to inventory management and controlling. As stated under methodology, a total 68 copies of questionnaire were distributed, and 60 of them retrieved as correctly filled which were subsequently used in the analysis. Based on this the study analyzed first respondents background

Table 4.1 Characteristic of respondents

Item	Category	Frequency	Percentage (%)
Sex	Male	45	75
	Female	15	25
	Total	60	100
Age	20 - 30	20	33.33
	30 - 40	17	28.33
	40 – 45	13	21.66
	Above 45	10	16.66
	Total	60	100
Education	10-12	6	10
	Certificate	18	30
	Diploma	15	25
	Degree	20	33.33
	M.A	1	1.66
	Ph.D.	-	-
	Total	60	100
Work Experience	Below 1	10	16.66
	1 – 3	15	25
	2 – 5	15	25
	5 – 7	11	18.33
	7 – 10	5	8.33
	Above 10	4	6.66
	Total	60	100

Source questionnaire, 2020

Based on the above table from 60 total respondents 45 (75%) of them were male while the rest, 15 (25%) of them were female. With regard to gender issues there were balance number of male and female employee.

With regards to the age condition of the respondents, the distribution of frequency and percentage shows that, 20 (33.33%) of respondents found between the age groups of 20 – 30, about 17 (28.33%) of them found between the age groups of 30- 40 on the other hand 13 (21.66%) of them found between the age group of 40 – 45, the rest 10 (16.66%) were above 45 years. According the age distribution of the respondents majority of them found at then young and youth.

With regards to educational level of the respondents the data show that, 6 (10%) and 18 (30%) of respondents respectively found between the education level of 10 – 12 completed and certificate holder, on the other hand, there were 15 (25%) diploma and 20 (33.33%) degree with only 1 (1.66%) master degree. According to the data level of education below degree level was 39 (65%) which can contribute its own impact negative on the practice of effective inventory management and warehouse controlling system.

With related to the employee work experience 10 (16.66%) of them were found below 1 year of service, on the other hand 15 (25%) of respondent between the service years of 2 – 3 and 3 – 5, the rest 11 (18.33%) and 5 (8.33%) respectively found between the service of 5 – 7 and only 4 (6.66%) were above 10 years of work experience. As the data indicated majority of the respondents were found below 5 years' experience. Accordingly, the interview indicted that ‘‘Turnover of employee in the organization is very high ’’ this is because salary and incentives, relatively from other similar industries.

4.2 Inventory Controlling Technique applied in the Organization

There are several types of inventory controlling system applied in an organization. Inventory control or stock controls is methodological activities, focusing on many related facets of inventory controlling system such as, forecasting future demand, supply chain management materials controlling, procumbent cost controlling, disposal or scrap materials management, etc. to achieve organizational effectiveness of inventory controlling system management can apply several types of technological and manual techniques of inventory management tools such as,

ABC analysis, Material Requirement planning (MRP), Economic order quantity (EOQ) Model, Minimum Safety Stock, etc. Based on this concept attempt had been tried to asses inventory controlling technique's applied in EEP.

4.2.1 Types of inventory counting

There are two basic types of inventory counting producers these are perpetual and periodic used to track of the actual amount of products. Primary use of the periodic inventory system occurred prior to the introduction of point of sales scanner and computers. The periodic system allows a company to record sales of merchandise in a special account. On the other hand, perpetual system of counting used for the introduction of point – of – sale system and computer greatly advanced the use of the perpetual system of counting. The system records each sales of merchandise and places an entry in the enterprise and inventory account. Both of the systems have their own advantage. Accordingly, Table 4.2 indicates respondent answer of the studied enterprise inventory counting system.

Table 4. 2 Types of Inventory Counting in EEP

Question	Types	Frequency	Percentage (%)
Types of inventory counting	Periodic	30	50
	Perpetual	19	31.66
	Both	11	18.33
	Total	60	100

Source questionnaire, 2019

According to table above, 30 (50%) of respondent reported periodic inventory counting is used majorly in their organization on the other hand, 19 (31.66%) of the respondents indicated their company also used perpetual counting system and the remaining 11 (18.33 %) of them reported as their company counting system used both periodic and perpetual counting system. In addition to those respondent the study were also, asses which types of method regularly applied by the organization through interviews accordingly, most of the respondent replied that, the company count is usually made yearly at the end of finical year, the method of pricing that company use is weighted average method. In addition, it is desirable to undertake account at another point in a year to verify inventory record.

4.2.2 Model used to control inventory

There are different types of models used to control inventory such as, Min/Max inventory ordering method is a basic reordering mechanism that has been implemented in different industry to control inventory. The Min value represents a stock level following the reorder. On the other hand, Lead time is the time from the point of requisite to the point when the material is received and inspected is ready. In this regard the study were assessed respondents view on the model used to control inventory in EEP, the result implied that 10 (16.66%) of respondents replied the enterprise used minimum level of inventory control model while, 8 (13.33%) of them said maximum model, however majority of respondent 38 (68.33%) assured that, lead time is mostly used by the company to control inventory. Lead time is the time from the point of requisite to the point when the material is received and inspected is ready.

Table 4.3 Model used to control Inventory

Question	Types	Frequency	Percentage (%)
model used to control inventory	Minimum level	10	16.66
	maximum level	8	13.33
	Lead time	38	63.33
	Others	4	6.66
	Total	60	100

Source questionnaire 2019

Generally the above information indicates that lead time is mostly used by the eEnterprise to control inventory. Lead time is the time from the point of requisite to the point when the material is received and inspected is ready. Correct panning, Assessment and monitoring of the item at the required time are necessary to get the item at the required time. Lead time is important only when the time from requisition to receiving of material is well known and also this model needs proper planning and monitoring. So this model may negatively affect inventory controlling if lead time not know and if panning and monitoring are not correct.

4.2.3 Techniques used to control Inventory

inventory optimization supply chain , ABC, analysis is an inventory categorization method which consists in dividing items in to three categories A, B and C. Accordingly, A, being the most valuable items, and C being the last valuable ones. This method aims to draw attention on the critical few. On the other hand, EOQ applies only when demand for a product is constant over the year and each new order is delivered in full when inventory reach zero. Comparatively, BOQ is a flexible approach to your floodplain solution a simple self – service online system to manage your payments and inventory.

With related to this definition the techniques inventory control applied in the studied area was both of the three method including others methods accordingly, 12 (20 %) of respondent responded EEP used BOQ, on the other hand majority of respondents 34 (56.66%) responded the enterprise used ABC method, about 11 (18.33%) said EOQ methods of inventory controlling techniques also used in EEP, but only, 3 (5%) respondents indicated other types of methods. As we observe below in the table 4.3 the company tried to use different types of method

Table 4.4 Techniques of inventory control used by the organization

Question	Types	Frequency	Percentage (%)
Techniques of inventory	BOQ	12	20
	ABC Analysis	34	56.66
	EOQ	11	18.33
	Other	3	5
	Total	60	100

Source questionnaire, 2020

4.2.4 Codification system of the company

There are different types of store codes designed to suit various needs they may be based on types of store codes designed to suit various needs. It can be based on types of store items and the purpose for which the item is used. Accordingly below the studied area respondents indicated what kind of codification used their company

Table 4.5 inventory Codification EEP

Question	Types	Frequency	Percentage (%)
Type of codification	Numeric	35	58.33
	Consonant	10	16.66
	Both	10	16.66
	Others	5	8.33
	Total	60	100

Source questionnaire 2019

According to above table, 35 (58.33 %) of respondent responded the company use numeric codification system, 10 (16.66 %) responded the company use consonant system 10 (16.66%) replied both numeric and constant codification system used by the organization and the remaining 5 (8.33 %) responded the company use others method.

4.2.5 Valuation of inventory in EEP

Valuation of inventory is a very important in any organization. It is controlled so that it does not exceed the requirements and at the same time there are no stock outs. Among several types of valuation techniques EEP used weighted average method of inventory valuation which is based on the assumption the good commingled and what no particular both of goods is retained in the inventories when the perpetual Inventory system is used, the weighted average method given the result of a mount weighted average, under the perpetual inventories system, a new weighted average is computed after each purchase and for this reason is known as moving inventory valuation and inventory income measure under FIFO and those achieved under LIFO. The weighted overage method does not reduce an inventory value constant method does not reduce of items in inventory by its lay's behind market producing a period of rising price it tend to below replacement cost and during a period of below replacement cost and during a period of felling price if tend to the above replacement cost. In this regard model used to Control inventory valuation of the company implied below in the table:

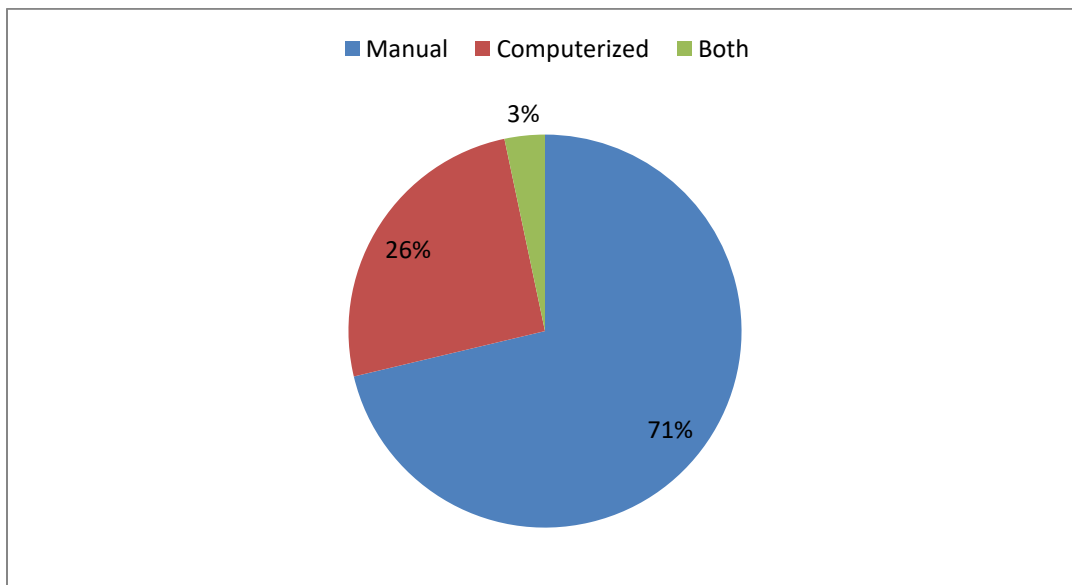
Table 4.6 Model used to control Inventory

Question	Types	Frequency	Percentage (%)
type of inventory	FIFO	13	21.66
	LIFO	17	28.33
valuation	AVERAGE	30	50
	Total	60	100

Source questionnaire 2020

From the above table 4.9, 13 (21.66 %) of respondent responded the company use FIFO method to evaluate inventory, 17 (28.33%) responded the company use LIFO method and the remaining 30 (50 %) responded the company use weighted average method to evaluate inventory. Based on the respondents we can analyses that, the company use average method of inventory valuation. As the company’s budget is planned by itself using average method to evaluate inventory is appropriate method. Through the method the company can get the following advantages like to resist price fluctuation, having equal price for all project of the company and also it may have a simple calculation. But this method has its own impact this is because it is difficult to decide the inflow and out flow of inventory.

Fig 1. Inventory Recording practice in EEP



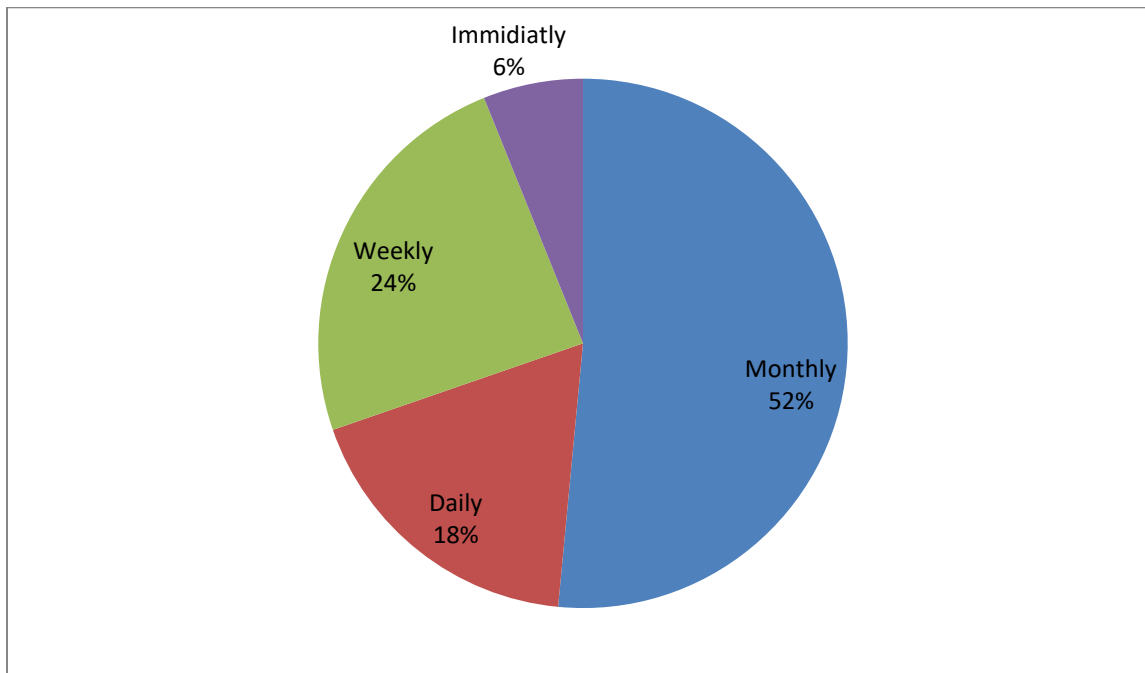
Source questionnaire 2020

The respondents were asked to answer —What kind of inventory recording system does the company use? Their responses were presented in figure According to the data of this table, the majority, 71 percentages of the respondents were replied that, the company’s recording systems were manual. Very few 26% of the respondents were argued that, the company’s inventory recording systems were computerized. On the other hand, 3 percentages of them responded as the company used both (manually and computerized). Manual recording systems, misplaced ledgers and vouchers, issuing without accompanying documentation and delays in posting causing discrepancies between actual and physical stock balances.

4.2.6 Inventory recording techniques

Result summary of frequency of inventory record update in the organization the study was assessed respondents to indicate inventory recording interval in the organization; below the fig implied their respective answers

Fig 2. Inventory recording frequency of the organization



Source Questioner, 2020

Indeed as shown in figure above, 52 % of respondents indicated that the frequency of inventory record update within their respective categories were on monthly basis and 24 % of respondents indicated that the frequency of inventory record update were on weekly basis. On the other hand

6 % and 18% of respondents indicated that the frequencies of inventory record update were on immediately and daily basis respectively. The figure above reveals that there is no specific time in which the stock recording exercise should be conducted. Jessop and Morrison (1994) had emphasized on the important to design receipt and issuing times and days for good to and from the warehouse in order to give time stock control staff adequate time to do the posting of records.

4.3 Factor affecting Inventory controlling and management

In the above section the study were discussed several types of techniques applied in the organization to control inventory; in this section the study were assessed factors that affect the organization inventory management and controlling techniques. Accordingly, the study focused to assess, challenges relayed to planning challenges, operational challenges, track system challenges, inventory monitoring and Evaluation system. The study consider those areas, because to assess the whole process inventory management and controlling techniques starting from organizational inventory plan to its evaluation system of performance.

4.3.1 Inventory planning

Table 4.7 Constraints related to Inventory Planning in EEP

No	Parameters	SD	D	NW	A	SA
1	The store division make the required plan to control inventory	5 (8%)	7 (12%)	8 (13%)	30 (50%)	10 (17%)
2	The team set to control inventory is involved in the inventory plan	8 (13%)	28(47%)	6 (10%)	10(17%)	8(13%)
3	Inventory suppliers are involved in the inventory plan	19 (32%)	22 (37%)	4 (7%)	10 (17%)	5 (8%)
4	Inventory control plans are communicated throughout the organization	17 (28%)	29 (48%)	6 (10%)	6 (10%)	2 (3%)
5	Inventory control plans are affected by the involvement of incompetent staff	6(10%)	7(12%)	7(12%)	22(37%)	18(30%)

Source questioner, 2020

As reflected in table more than a half (67%) either agreed or strongly agreed that the Stores division does make plans for inventory control, 13% were neutral, and 20% either disagreed or strongly disagreed with the statement. It can be concluded that the Stores Division puts in place the required plans to allow for an effective control over inventories. The results opposed a study by Gupta *et al.* (2011: 6301) who indicate that most of the municipalities do not initiate control of inventory plans for their operations. Achua (2011: 327) emphasized that planning is a cornerstone for a successful control and cost reduction of inventories.

With regards to the involvement of the team set to control inventory stock, it is disconcerting that the majority (63%) of the respondents either disagreed or strongly disagreed that they are involved with inventory control planning, while 30% either agreed or strongly agreed with the statement, and 10% were neutral. The results claim that inventory planning by the Stores Division is not horizontally based. Correspondingly, 69% of the respondents either disagreed or strongly disagreed that inventory suppliers are involved with inventory planning, while 7% were neutral with the statement, and 25 % either agreed or strongly agreed. From the results, it is clear that the Stores Division fails to involve relevant people in the planning of inventory control. In this regard, Nicole (2013) and Gupta *et al.* (2011: 6301) believe that involving the members of staff and suppliers can help the organization to balance current inventory requirements with the future demands.

It is also disconcerting to note that 76% of the respondents either disagreed or strongly disagreed that the inventory control plans are communicated throughout the organization, while 14% either agreed or strongly agreed with the statement, and 10% of the respondents were neutral. The results reveal that there is improper communication, and is seemingly to have a negative influence on the success of inventory control at the Stores Division. In acknowledgement of the results, Georgiou *et al.* (2012: 2) mention that proper communication is characterized by reaching all relevant stakeholders, and that poor communication can result in incorrect information sharing and can disapprove performance.

It is noted that the majority of the respondents (67%) agreed or strongly agreed that the plans of inventory control are affected by the involvement of incompetent staff, with only 22 % of the respondents who either disagreed or strongly disagreed with the statement, and 12 % were neutral. The results give a clear understanding that the incompetency of staff is one of the

contributing factors to poor inventory control at the Stores Division. In support of the findings, Achua (2011: 326) indicates that incompetent staff can hardly improve performance. Therefore, it is emphasized that competency of staff can help to improve the control of inventories.

Operation process

Table 4.8 Constraints of inventory Management in operation process

No	Parameters	SD	D	NW	A	SA
1	There is long bureaucratic purchase difficulties	4(7%)	8(13%)	6 (10%)	30 (50%)	12 (20%)
2	Inventory Carrying Cost affect the organization Inventory management practice	6(10%)	2(3%)	-	30(50%)	22 (37%)
3	There is effective computerized documentation of Inventory	12 (20%)	31 (52%)	6 (10%)	8 (13%)	3 (5%)
4	Issuing of procured products controlled by specific personnel's	20 (33%)	29 (48%)	2 (3%)	6(10%)	3 (5%)
5	Purchasing and procuring of product is on time	31 (51%)	15 (25%)	-	3(5%)	12(20%)

Source questioner, 2020

As it can be noted from figure 4.4 below, 50% of the respondents strongly agreed with the statement, 20% agreed, 10% were neither agreed nor disagreed and 13% of respondents indicated somewhat disagreed. Finally 7% respondents indicated strongly disagreed. Since majority of the respondents (70%) agreed with the statement, it implies that long bureaucratic procurement practice affects inventory control the organization and therefore the organization should ensure to avoid long bureaucratic procurement procedure to improve inventory control. The finding agrees with the Osborne & Plastrik (1997) finding who indicated that bureaucratic organization has some significant negative side effect. According those Scholars, too much red tapes and paper work not only lead to unpleasant experiences but also to inefficient operations

The findings of Inventory carrying cost of the sample include: determination of inventory order size, insurance coverage, availability of expired, obsolescence and damaged inventory items in the warehouse, and respondents view on whether carrying cost affects inventory control of the organization. This aspect of the analysis deals with the review of respondents on questionnaires about inventory carrying cost. Accordingly, (87%) of respondents in their agreement implied that the organization inventory carrying cost practice of the organization affect inventory controlling system, in this regard interview implied that, inventory order size were determined by vehicle capacity, order size based and using past experience. However, the organization didn't use forecasting and mathematical model. The study revealed that the respondents were almost not used mathematical model to determine inventory reorder level of the organization. Thus ordering cost were increased inventory carrying cost.

Regarding the organization recording of inventories using computerized techniques respondents accounted 72% in their disagreement implied that, lack of computerized system for recording inventory data was one of the factors that affect the effectiveness of inventory control to a great extent. However, respondents accounted for 17% in their agreement implied the organization implied computerized recording of inventories somehow. The study revealed that majority of the respondent was not satisfied with the current system used as it presented various challenges, among them being slowing the operations, compromising data integrity and security matters and non-reliance on accuracy of inventory data captured in the system. in addition to lack of computerized techniques of record keeping of inventory the study also revealed that lack of adequate Stationeries and / stores records used in stock control, specific time or date for posting stores records had a direct effect on inventory control.

In regard to issuing and receiving of goods 81% respondents in their disagreement implied that the activity was commonly done by different personnel, an activity that may have a negative effect on: poor stock control recording, misappropriation of stock, discrepancies during reconciliation of stock balances and lack of responsibility for actions related to stock control. The study revealed that number of staff involved in stock control activities was not adequate, there was no specific time in which the stock taking exercise was set to take place, discrepancies between actual and physical stock balances is evident. The respondents attributed the discrepancy between the physical stock balance and balances reflected in stock control record to

be attributing factor for theft and pilferage, frequent stock out of some crucial items and poor planning.

For the case of procuring with the right time, the respondent replied that 76 % of respondents either disagree or strongly disagree with the purchase of the right time. Conversely, 24 % respondents replied that the purchasing unit purchases the requested item with the right time. Hence, it is also possible to realize that there is a difficulty with regards to the time taken to procure the material inventory materials. Besides, according to the procurement support process team leader, the main reason for the delay of purchasing is that most suppliers engaged in to a contract of purchase with having minimum or no stock. After the contract, they may need additional time to supply the material. Beside the extended procurement work flow makes the time taken longer than it is expected.

Thus, it is possible to understand that the time taken to procure inventory materials were too long. Since each department achieve their goal with the supplied material, the delaines of supplying the material makes them not to achieve as per their own time plan.

Inventory Keeping Track System

Table 4.9 Constraints of inventory Management in Keeping Track System

No	Parameters	SD	D	NW	A	SA
1	Online keeping track system effective in controlling the organization inventory materials	14 (23%)	21 (35%)	4 (7%)	15 (25%)	6(10%)
2	The use of online keeping track systems is easily understood	17 (28%)	28 (47%)	5 (8%)	7(12%)	3(5%)
3	The use of online keeping track system helps to achieve proper inventory control	6 (10%)	8(30%)	7(12%)	23 (38%)	16 (27%)
4	Online keeping track system is better than manual systems	4 (7%)	8(13%)	27(45%)	16(27%)	5 (8%)
5	Online keeping track system is more reliable	11(18%)	12 (20%)	19 (32%)	14 (23%)	4 (7%)

Source questioner, 2020

Table 4.6 reflects that, 58% either disagreed or strongly disagreed that an online keeping track system is used to control inventory effectively, while 7% of the respondents were neutral with

the statement, and 35% of the respondents either agreed or strongly agreed that the organization use somehow online track keeping controlling inventories. The results confirm that the Stores Division didn't effectively use an online keeping system to control inventories. The results are similar to that of Nassar and Hegab (2006: 555) who found that most of African municipalities are reluctant in using online keeping track systems for their operations.

The vast majority of the respondents (75%) either disagreed or strongly dis agreed that the use of an online keeping track system by the Stores Division is easily understood, while 8% of the respondents were neutral with the statement, and 17% of the respondents either agreed or strongly agreed.

When asked whether the use of an online keeping track system helps to achieve proper inventory control, 12% of the respondents were neutral, 65% of the respondents either agreed or strongly agreed, and 23% of the respondents either disagreed or strongly disagreed. The response implied that, though the organization applied in some inventories online controlling managing system of tack keeping, but its system was not easily understandable as majority of employee indicated.

On whether an online keeping track system is better that a manual system, the majority (45%) of the respondents was neutral, while 35% of the respondents either agreed or strongly agreed and 20% of the respondents either disagreed or strongly disagreed with the statement. The results claim that, due to a high level of staff experience, the majority claim to understand an online system, but at the same time, they were not sure whether an online system helps them to achieve proper inventory control. Therefore, a possible explanation could be that most of the respondents are not sufficiently skilled in information technology IT). Therefore, it is not easy for them to have a clear understanding of the importance to use technology. To support this premise, Bouzida *etal.* (2011: 224) indicate that the use of technologies has a link with the individuals' education.

A total of 38% of the respondents were neutral on whether an online inventory keeping track system is more reliable or not, while 38% either disagreed or strongly disagreed compared to 30% who either agreed or strongly agreed with the statement. The study claims that even though there is no trust in the workforce because of their lower technical skills, the results exposed that the use of online system to keep track of the inventory stocks is not reliable. A study conducted by Stimson

(2012: 13) indicated that an electronic control of inventories is not adequate without the assistance of a manual system. Even though the EEP has adopted the use of electronic systems to control inventories, the use of manual systems seems to be still relevant for extra support.

4.4 Employee Facilities to Improve Inventory management and controlling techniques

There are different types of facilities that any company should fulfill for employees for the effective accomplishment of the company mission, such as, training, creating conducive working environment, providing easy rule and regulation and motivate employee through different types of motivational activities. Accordingly below in the table similar questions were provided to assess employee's performance, satisfaction and activities of the organization.

Table 4.10 Issues related to facilities for employee

NO	Parameters	Excellent		Very good		Good		poor		Very poor	
		No	%	No	%	No	%	No	%	No	%
1	Technical assistance and trainings given for employee	-	-	4	6.6	10	16.66	34	56.66	12	20
2	Conductivity of working environment	2	3.33	7	11.66	15	25	20	33.33	16	26.66
3	Cross functional teams information exchange			3	5	12	20	21	35	15	25
4	Motivational incentives	3	5	9	15	12	20	28	46.66	8	13.33

Source questionnaire, 2020

Training is important for new and previous employees to improve employee performance. Raising awareness and training program of the employee in plastic industry is necessary more than any kind of other industries because of complex nature plastic industry, and as the industry is new for many of less developed countries there is no enough qualified employee in the area so that it is necessary to fill the gap by providing training. Accordingly, as the assessment indicated the studied organization lack availability of skilled employee, especially in the technical parts of the manufacturing processes such as, in the over storing the machine, maintenance personnel and

chemist. As a result, the organization expense additional cost for importing skilled employee forces. However, when we see the studied organization activities to provide training and technical assistance is very low this was indicated by majority respondents 34 (56.66%) and 12 (20%) of them respectively indicated the level of training and technical provided in the organization is poor and very poor respectively.

According to Alemayehu (2010), creating positive working environment in an organization is not just facilitating things some areas rather it is the activity of solving the company holistic problem starting from the structure of management to the lower class of the employee. This is because, employee spend so much time in their working environment each week, so that, it is important to companies to try to optimize working conditions, such as, providing upgraded technology or information to help employees task to accomplish efficiently, pay cost of tuition for employees taking related course, reduce too much work load, keep their moral by respecting, provide company's fair wage scale, and provide opportunities to earn special incentives such as, bonuses and extra paid time off. With related to these in table, majority of respondents including respondents who said working area conductivity is poor and very poor, 36 (60%) assured the organization didn't create good working environment.

According to Vendor (2011) a cross functional team is a group of people with different functional expertise working towards a common goal. It may include employee from finance, human resources, marketing and even outside the company with customer and suppliers. This activity is doing within a team consensus but often lead manager or coach of the team. A group of qualified individuals of various background and disciplines are assembled to collaborate in an efficient manner in order to better the organization or solve the problem. With related to this the respondent explain most of them are not engage in this type of activities unless working where they are assigned. When we come to the studied organization Cross functional teams information exchange is poor this was indicated by 60% of respondents.

Today's, keeping employee loyalty/motivation/empowerment has never been important as during the current economic down turn. Alemayehu (2010) discuss that, empowerment occur when an employee is given the freedom, power, trust, autonomy, and encouragement to carryout job – related task; when used as a motivated strategy empowerment provide an employee with a sense of pride and ownership over their work. People want to feel control of their destiny especially in

the work place. In addition to empower the employee the organization should provide them course wise education, training and technical assistance. However, according 59.99% of the studied organization respondents the discussed fact is not applied in their organization.

Monitoring and Evaluation System

Monitoring and evaluation are integral parts of management and provide a link between planning and implementation. While monitoring focuses on the activities and outputs, evaluation focuses on the outcome and goal. Well organized monitoring and evaluation system of inventory management is a useful tool that can be used to assess stock availability, documented information, quality of items, quality of packing, inventory service costs (insurance and tax), storage space cost (leasing costs or land rate), inventory risk cost (cost related to pilferage, the risk of good being kept so long that they become obsolete, risk of damage), delivery of products on time, performance of individual employee etc.,. Based on the concept the study was providing related questions to assess the studied area inventorying monitoring and evaluation system.

Table 4.11 Constraints of inventory Management in Keeping Track System

No	Parameters	SD	D	NW	A	SA
1	Stock Recording - Receipt and Issuing of Goods took place by specific personnel's	18 (30%)	26 (43%)	4 (7%)	7 (12%)	5(8%)
2	There is adequacy of staff involved in stock control activities	17 (28%)	28 (47%)	5 (8%)	7(12%)	3(5%)
3	There is regular checking and controlling mechanism stock overflow materials	14 (23%)	17 (29%)	7(12%)	15 (25%)	7 (12%)
4	There is effective company physical inventory checking activity	17 (29%)	24 (40%)	2(3%)	10 (17%)	7 (12%)
5	On time disposing used (scrap) materials	12 (20%)	35 (57%)	10(17%)	4 (6)	-
6	Performance Measurement of Procured material is effective	20 (33%)	16 (27%)	9 (15%)	7 (12%)	2 (3%)

Source questioner, 2020

Regarding Stock Recording - Receipt and Issuing of Goods, 73% respondents in their disagreement reported that the stock recording roles are performed by different individuals and these respondents felt that this practice had an effect on effective stock control records. Involvement of several personnel in stock recording was reported to have a negative effect on: poor stock control recording, misappropriation of stock, discrepancies during reconciliation of stock balances, and lack of responsibility for actions related to stock control. The results are similar with the finding of other Scholars. Jessop and Morrison (1994) was on opinion that Stock recording (issuing and receiving) should be done by different personnel to avoid colluding in the store.

The study assess the adequacy of staff involved in stock control activities; accordingly, 75% of responds implied in their level of disagreement implied that; the number of staff involved in stock control activities are inadequate. The results implied that, inadequate staffing felt that this shortage had an effect on posting of stock control records. When asked to elaborate the respondents indicated that staff shortages effected on posting of stock control records slowing down the entire inventory control process, and increase errors due to volume of work and fatigue among staff undertaking the posting roles. According to Jessop and Morrison (1994), adequate staff should be employed in the organization to help in proper stock recording system. This is similar with the result of the finding.

Stock overflow should undesirable in which a particular program tried to use control through computerized system. With related to this respondents accounted for 52% in their disagreement implied stock overflow controlling system were not efficient, while, 41% of the respondents implied the reverse though, the organization didn't effectively control stock overflow through computerized ways, however, there is effective manual stock overflow controlling system. The result implied that, there is an activity in EEP to control stock overflow manual, however, computerized controlling system of inventory materials overflow was still poor.

The study were also assess Physical inventory checking activities; Inventory checking is the physical verification of the quantities and condition of items held in an inventory or warehouse. Because of inventory is stored in warehouses, the physical management of inventory and warehousing are immediately connected. Some causes inventory may be stored an extended time. In other situations, inventory is turned over rapidly and the warehouse functions as the

distribution center. With regards to this the respondents above the table implied that, 69% in their disagreement reported that, company physical inventory controlling system is not effective, while, 48% in their agreement implied the reverse there is effective physical controlling of inventories.

The public procurement is often delay in disposing on time for different reasons such as, bureaucratic process of the organization, lack of responsible body which dispose used materials for other users, lack of effective rule and procedure that facilitate how used materials of public good disposed and so forth. As a result of this problem many of used materials of public organization such as cars, metals, and other materials are damaged. As we see from the respondents 77% of the respondents indicate their disagreement for the provided question. This indicates that the organization doesn't dispose used materials on time. According to observation of the survey field the researcher was witness of observing much of unused scraped materials such as, cars, metals and others in the organization whether not used in the organization or not provided for sales.

Regarding procured performance measurement the study tried to assess the performance of purchasing department with the most common parameter, right quality, right time, right price, right place and right quantity. In order to have clear and better data for the above parameter, the researcher use questionnaire and the respective finding are presented below

According to the above Table it shows that 60% of the respondents either disagree or strongly disagree with the purchasing department performance of purchasing the right quality. This is about more than two third of the respondent unhappy with the quality of the material purchased by procurement unit and thus, it suggest that there is poor performance with the purchasing department. Having this in mind, the authority service is delivered to the public by using the procured material. Moreover, as per the researcher observation, enormous amount of procured material are stored in the authority store (either in the warehouse or stock yard) with minimum or no service year and frequent service failure during delivery of water. The procurement support team leader elaborate the situation as one of the main reason to accumulate many materials in the store is that the quality of the procured items does not fit for the intended purpose. As well, one of the reasons for the interruption of electric supply to the public cause by material miscarriage is

a result of poor quality material. The study also suggested that the main cause is the material are produced through open bid and close follow up and inspection of quality are difficult.

Thus, whatever strategy, process and goal are set, the right material and economic use of the resource is critical for the authority to deliver its service to the public. According to CSA (2008) reported, more than 80% of the EEPPC budget is spent through procurement. This implies that significant portion of the authority's budget is not economically used. The authority service might not be as expected because of such materials poor performance. Thus, this problem has a direct impact for the authority's existence and needs the right immediate solution.

4.5 Discussion of Interview

Ethiopian Electric Power (EEP) has a chance of purchasing supplies and the required inventory materials from local market. However, most of the time some electric equipment's and spare parts are not found in the local market because of that, the large quantities of the inventory items are purchased from abroad market.

The company foreign purchase activity has a great challenge to get foreign currency and taking of a long period to import the purchased inventory items. On the contrary of the above challenges, the inland market cannot satisfy the demand of the company providing the required inventory items. Beside this, the price of the local market of the inventory items is very high rather than foreign market price.

The company current trend of purchasing annual stock items and replenishment is based on the user department requisition without checking the balance of stock on hand.

There are some gaps between the central warehouse and purchasing department. These gaps are-lack of exchange of information between each other and they don't apply policies and procedures of purchasing of inventory items. Because of theses gaps the company warehouse is exposed to idle stock, excess stock and it also declines the customer service performance.

Sometimes there is a problem of dissimilarity of the purchased inventory with bid won sample purchased inventory items during receiving is taken place. Due to the suppliers exchanges the real winning sample with the fake inventory items.

Because of the warehouse is occupied with the obsolete items, idle stock items and excess stock items, the warehouse faced a problem to sort and arrange the inventory items in to their kind

which enables the company incur high storage cost. Additionally, the above problem occurs the narrowness of the place for new purchased inventory items and returned surplus inventory materials. It also results the miss used active inventories and damaging of inventory items. This uncomfortable place forced to keep the inventory items out of the store without any shelter. Even if such many problems are occurring in the warehouse activities, the company hasn't shows any activity to solve the difficulties.

The warehouse material recording is managing by manual system without using computer technology. Due to this problem, there is no updated information accurately and timely in the warehouse and not have any controlling system to control the excess and idle stock of inventory items. Beside this, there is no mechanism to set the level of stock items to request the replenishment on time but the stock maintenance is done by user department requisition.

The returned materials from projects without full information are not recorded and issued for users. So, the study obtained that there is a gap of handling and controlling system in the area of returned materials which is exposed to obsolete and theft.

The company warehouse is very occupied with different in active inventory materials .However, the most important materials which is used for customer services and fast moving stock items is always got a problem of a shortage.

The human resources work in warehouse has a gap of skilled, knowledge and education as well as, finance workers who work on material accounts has a gap on skilling knowledge in controlling inventory materials.

The company excess and idle inventory items affect the cash flow of the company. Because the company inventory items which is not fast movable but used for customer service that is purchased from abroad or local market by high price and tied up the company capital.

The company material management controlling system has a problem of getting updated information due to the warehouse data is not properly dispatched on time. The warehouse data is delaying, most of the time for a minimum of one month the company data base computer system that the finance department used to handle the stock materials record is very old system in addition, it is not have access to record the history of stock materials as required. Due to these problems the finance department can't get the report of excess, idle, obsolete and expired

inventory items. So, lack of computer technology is the one that challenges the controlling system of the company to control the stock items as required.

At the end of fiscal closing period, the stock card with stock catalogue and stock ledger with stock catalogue are not reconciled, due to the recording and posting error made on warehouse and finance department. The returned materials are the other problems of recording among the stock catalogue, stock ledger and warehouse stock cards. These effect can be highly affects the company financial statement.

CHAPTER FIVE

5. CONCLUSIN AND RECOMENDATION

5.1 Conclusion of the Findings

The objective of the study was to assess Inventory management and controlling practice of EEP. In achieving the major objective of the study were collected data using questioner from employee of the organization worked related to inventory such as, store keepers, purchasers, and accountant.

The study identified, on many performance indicators majority of the respondents responded that they were very dissatisfied and/or strongly disagree and disagree with the organization inventory management and controlling techniques. This evaluation of respondents indicates that on some performance indicators the company did not meet their expectation. However, some of the respondent evaluates in contrary with the majority respondent. Based on this study conclude some of major points as follow:

Because of the transparency problem of the management, the employees were not aware of the root cause of the problem and most customers were forced to assume the power interruption was due to power export or shortage of power energy. The work units were not ready to give materials to others because they fear that there was no guarantee when the inventory could be refilled.

Large amounts of obsolete and inactive inventory items were found in the stocks of the company. These all show, carelessness, lack of concern, and negative attitudes of managements and employees towards inventory items, materials and assets of the company. If such perceptions and practices are not corrected on time, the consequences will harm the company's business goals and customers using company's services.

The organization specific period of accounting system is not sufficient. As a result, it is difficult to identify easily costs of every individual item and the recent used and purchased of the organization. The organization didn't provide different types of facilities for employee such as, upgraded technology or information to help employees task to accomplish efficiently, reduce too much work load.

5.2 Recommendation

Based on the findings of the study the following recommendations are proposed:

- In planning for purchase the company has to consider estimated amount of possible obsolescence and damages in raw material and finished to avoid cost overruns above the planned purchase to replace such obsolescence and damages
- I advise the company give focus to the value of periodic accounting system of the inventory, to identify easily costs of every individual item and the recent sold and purchased of the organization.
- The company need an organized and continues system of monitoring and evaluating system of the inventory.
- I advise the company improve the warehouse in a way to minimize damage and upgrade the knowledge of employees to use technology to improve service for their customers and maximize use of storage space, achieved through appropriate measures in the design, minimizing the use of manipulating operations and use of modern equipment of warehouse.
- The inventory planning management of the enterprise should consider the real demand which benefit the enterprise by avoiding unnecessary inventory costs and lower inventory levels

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1. if your answer for question number “3” is other please specify -----

2. What type of technique used by the company to control inventory?

Best order quantity []

ABC analysis []

Economic order quantity []

other []

3. What type of codification system used by the company?

Numeric []

consonant []

other []

4. Inventory valuation system used by the company

FIFO []

LIFO []

weighted average []

7. Nature of Inventory Record

A. Computerized []

B. Manual []

C. Both []

8. Frequency of inventory record update

Daily []

Monthly []

Weekly []

Immediately []

Part III:- Factor Affecting Inventory Management and Controlling Techniques

The following questions are designed to assess factor affecting Inventory management practice of EEP. Please indicate the level of your agreement or disagreement using (x) on the following statements based on your experience in your company on the following supply chain integration management practices. The rating is from 1= Strongly Disagree to 5=Strongly Agree as shown below.

S.N.		Score Values				
		Strongly Disagree(1)	Disagree(2)	Neutral(3)	Agree(4)	Strongly Agree (5)
	Inventory Planning					
1	The organization makes plans for inventory control					
2	The team set to control inventory is involved in the inventory plan					
3	Inventory suppliers are involved in the inventory plan					
4	Inventory control plans are communicated throughout the organization					
5	Inventory control plans are affected by the involvement of incompetent staff					
	Factor affecting Operation process					
1	There is long bureaucratic purchase difficulties					
2	Inventory Carrying Cost affect the organization Inventory management practice					
3	There is effective documentation and record keeping of Inventory					
4	Issuing of procured products controlled by specific personnel's					
5	Purchasing and procuring of product is on time					
	inventory keeping track system					
1	Online keeping track system is used to control inventory					
2	The use of online keeping track systems is easily understood					
3	The use of online keeping track system helps to achieve proper inventory control					
4	Online keeping track system is better than manual systems					

5	Online keeping track system is more reliable					
Continuous Monitoring and Evaluation System						
1	Stock Recording - Receipt and Issuing of Goods					
2	Adequacy of Staff Involved in Stock Control Activities1					
3	regular checking and controlling mechanism stock overflow materials					
4	company physical inventory checking activity					
5	Inventory Recording and Valuation is effective					
6	On time disposing used (scrap) materials					
7	Performance Measurement of Procured material is effective					

Issues facilitated for Employee to improve inventory management preface of Employee

<u>NO</u>		Excellent	Very good	Good	poor	Very poor
1	Technical assistance and trainings given for employee					
2	Conductivity of working environment					
3	Cross functional teams information exchange					
4	Availability of approved regulatory documents in respect of conditions for storage, handling					
5	Educational Opportunities for Inventory Employee					

Appendix: Interview Questions

1. What costing method is used for used products?
2. Does this method helps in managing and controlling inventory?
3. What are major problems in controlling and management of inventory of EEP?
4. Why EEP did not use pre-numbered inventory sheet is there any advantage of using or not?
5. How cost of work in process is determined?
6. Would you think the annual physical inventory taking process is correct?
7. Some stocks have not valued why shouldn't give value?
8. Damage inventory are counted why shouldn't remove this type of inventory?
9. Storekeeper handles the key and recorded on stock card it facilitate fraud why you make segregate duty?
10. The inventory sheets are not pre-numbered, what is the matter to use pre-numbered inventory?